

In the claims:

1-23. (Cancelled)

24. (Previously added) A ridge waveguide semiconductor laser diode adapted to support desired lateral modes of generated light, comprising:

a first cladding layer having a ridge with a first width at a bottom of the ridge;
a second cladding layer;
an active layer disposed between the first and second cladding layers;
a first conductor layer disposed on top of the ridge for application of current to the laser;
a defined gain region within the active layer adapted for conducting the current, wherein the defined gain region has a second width greater than the first width;
reduced conductivity regions within the active layer, flanking the defined gain region;
and

a second conductor layer for conducting current from the first conductor layer through the active layer.

25. (Previously added) The semiconductor laser diode according to claim 24, further comprising at least one quantum well layer formed within the active layer.

26. (Previously added) The semiconductor laser diode according to claim 24, wherein the second width of the defined gain region is selected to support a desired lateral mode of the light.

27. (Previously added) The semiconductor laser diode according to claim 24, wherein the second width of the defined gain region is selected to support only a fundamental lateral mode of the light.

28. (Previously added) The semiconductor laser diode according to claim 27, wherein the defined gain region has a first loss to generated light and the reduced conductivity regions have a second loss to generated light greater than the first loss.

29. (Previously added) The semiconductor laser diode according to claim 24, wherein the second width is selected such that the reduced conductivity regions flanking the defined gain region introduce significant loss to generated light in a higher-order mode, but do not introduce significant loss to generated light in a fundamental mode.

30. (Previously added) The semiconductor laser diode according to claim 24, wherein the active layer is formed of at least one of GaAs, InGaAs, AlInGaAs and InGaAsP.

31. (Previously added) The semiconductor laser diode according to claim 24, wherein the reduced conductivity regions are implanted with high-energy ions.

32. (Previously added) The semiconductor laser diode according to claim 24, wherein the reduced conductivity regions are implanted with protons of energy between about 130 KeV and 170 KeV.

33. (Previously added) The semiconductor laser diode according to claim 24, wherein the reduced conductivity regions have a first index of refraction and the defined gain region has a second index of refraction greater than the first index of refraction.

34. (Previously added) The semiconductor laser diode according to claim 24, further comprising an insulator layer disposed adjacent the first conductor layer.